

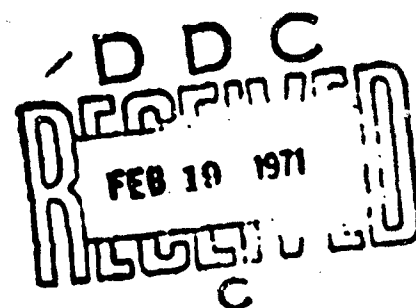
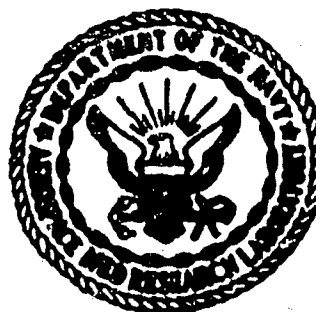
AD 718326

NAMRL-1125

STATE AND TRAIT ANXIETY IN STUDENT NAVAL AVIATORS

Steven F. Bucky, Charles D. Spielberger, and Ronald M. Bale

Best Available Copy



19990910005

December 1970

Reproduced by  
NATIONAL TECHNICAL  
INFORMATION SERVICE  
Springfield, Va. 22904

This document has been approved for public release and sale;  
its distribution is unlimited.

**STATE AND TRAIT ANXIETY IN STUDENT NAVAL AVIATORS**

**Steven F. Bucky, Charles D. Spielberger, and Ronald M. Bale**

**Bureau of Medicine and Surgery  
MF12.524.002.5001D**

**Approved by**

**Ashten Graybiel, M.D.  
Assistant for Scientific Programs**

**Released by**

**Captain N. W. Allebach, MC, USN  
Officer in Charge**

**4 December 1970**

**NAVAL AEROSPACE MEDICAL RESEARCH LABORATORY  
NAVAL AEROSPACE MEDICAL INSTITUTE  
NAVAL AEROSPACE MEDICAL CENTER  
PENSACOLA, FLORIDA 32512**

## SUMMARY PAGE

### THE PROBLEM

The State-Trait Anxiety Inventory (STAI) was administered to 134 aviation officer candidates (AOC's) during their routine entrance aviation physical examination at the Naval Aerospace Medical Institute. The STAI yields two scores: A-State, which is an index of anxiety at a given moment, and A-Trait, which is an index of a general level of anxiety proneness. The STAI was administered twice, once, with standard instructions and then with instructions to respond "as if you had just made your first landing on an aircraft carrier."

It was hypothesized that given with its usual instructions, AOC's would be lower in A-Trait and higher in A-State than a control group of 253 previously tested male college students. The second administration was expected to result in elevated A-State scores with no change in A-Trait.

### FINDINGS

The results of the first administration of the test confirmed the initial hypothesis. The second administration, however, resulted in a reversal of the expected findings; that is, both A-State and A-Trait scores were significantly lower than the scores obtained during the initial administration of the test.

The results are discussed in terms of the subjects' level of state and trait anxiety as well as their apparent test-taking attitudes.

-----  
Dr. Spielberger is Professor, Florida State University, Tallahassee, Florida

## INTRODUCTION

Recent research (1) has suggested that aviation officer candidates (AOC's) approach psychological testing with a considerable amount of apprehension and anxiety. Since these men are strongly motivated to become naval aviators, it is reasonable to expect that they may be somewhat defensive during the administration of such tests, and hesitant to admit to psychiatric symptomatology that may jeopardize their future as naval aviators.

Anxiety also may be a critical factor in determining the way in which the AOC will function as a student aviator and later when he obtains his wings. To evaluate the manifestation of anxiety in the AOC, two different, though related, constructs are necessary: trait and state anxiety. According to Spielberger et al. (2), trait anxiety (A-Trait) refers to relatively stable individual differences in anxiety proneness; that is, a disposition to perceive a wide range of circumstances as personally threatening. State anxiety (A-State) refers to a transitory emotional condition that is characterized by subjective feelings of tension and apprehension and heightened autonomic nervous system activity.

Based on Spielberger's theoretical discussion of state and trait anxiety, it was expected that AOC's tested early in their training program would be lower in A-Trait but higher in A-State than a control group of male college students. The A-Trait scores of AOC's were expected to be relatively low because they are a highly select group of individuals who have volunteered for a demanding aviation training program. Furthermore, they are also likely to have test-taking attitudes which lead them to consistently aim to look good. The prediction of relatively high A-State scores is based on the fact that the AOC is in a stressful situation, one in which a constant adjustment to a strenuous way of life must be made.

If an AOC is given an anxiety test with instructions to answer "as if you had just made your first landing on the aircraft carrier," it is expected that his A-State score will be markedly elevated since aircraft carrier landings are generally regarded as perhaps the most stressful part of the training program. However, it is hypothesized that A-Trait scores will remain the same because a personality trait should not change as a function of the circumstances under which the measure is obtained.

## PROCEDURE

### SUBJECTS

The subjects were 194 AOC's who were tested at the Naval Aerospace Medical Institute during their routine entrance aviation physical examination. All of the subjects were college graduates approximately 21 years of age. The control subjects consisted of the normative group of 253 under-graduate men at Florida State University who were enrolled in an introductory psychology course and tested during a regular class period (2).

## ANXIETY MEASURES

The State-Trait Anxiety Inventory (STAI) is a self-report scale that consists of 40 multiple-choice type questions. The A-Trait scale consists of 20 statements that require the subject to describe how he generally feels. The A-State scale also consists of 20 statements, but the instructions require the subject to indicate how he feels at a particular moment in time.

## METHOD

The STAI was initially presented to the AOC's with the standard instructions that are printed on the test form. Upon completion, the answer sheets were collected and the subjects were asked to take the test again, this time "as if you had just made your first landing on an aircraft carrier."

## RESULTS

The results in Table I indicate that when the STAI was administered with its usual instructions, AOC's had lower A-Trait scores ( $t = 3.233$ ;  $p < .01$ ), but higher A-State scores ( $t = 9.433$ ;  $p < .01$ ) than the control group of college students. These findings suggest that AOC's are less prone to respond with anxiety to various stress situations. However, they were more anxious at the time of the testing than were the college students. During the second administration of the test, the one in which the subjects supposedly had just landed on an aircraft carrier, A-Trait scores ( $t = 6.287$ ;  $p < .01$ ) and A-State scores ( $t = 2.579$ ;  $p < .01$ ) declined from those obtained with the first administration.

Table I

Means and Standard Deviations of A-State and A-Trait Scores of AOC's and College Students Under Usual and "Carrier" Instruction Conditions

		Instructions	
		Normal	Carrier
<b>AOC's (N = 134)</b>			
A-State	$\bar{x}$	= 47.19	$\bar{x}$ = 37.95
	S.D.	= 12.54	S.D. = 8.96
A-Trait	$\bar{x}$	= 34.39	$\bar{x}$ = 31.54
	S.D.	= 9.06	S.D. = 7.32
<b>College Students (N = 258)</b>			
A-State	$\bar{x}$	= 36.35	---
	S.D.	= 9.67	
A-Trait	$\bar{x}$	= 37.68	---
	S.D.	= 9.69	

## DISCUSSION

The results provide several interesting implications for understanding what it is like to be an AOC. First, AOC's appear to be less anxious generally than male college students but they admit to higher levels of A-State in their present situation. When reporting feelings associated with landing on an aircraft carrier, however, which bears directly on their future performances and career, A-Trait scores declined (no significant change was predicted) and A-State scores declined markedly (higher scores were predicted). What the AOC seems to be saying is, "While I am a relatively non-anxious person, I feel quite anxious in my present stressful life situation (being an AOC, adjusting to a military way of life); but when I fly, particularly, when I land on an aircraft carrier, not only will I experience relatively little anxiety, but I will feel much less anxiety than I am presently experiencing."

The results suggest that being an AOC is anxiety arousing for men who generally are less anxious than the average college student. When confronted with a situation in which they feel particularly vulnerable and where their entire future may be at stake, the defensive tendency to "look good" increases and anxiety is denied. The probable presence of such test-taking attitudes suggests that the relatively high A-State scores obtained during the initial administration of the STAI may actually underestimate the level of A-State experienced by the AOC.

## REFERENCES

1. Busky, S. F., The relationship between success in the Naval Student Flight Program and the California Psychological Inventory given with its usual and ideal instructions. NAMRL Report. Pensacola, Fla.: Naval Aerospace Medical Research Laboratory. In press.
2. Spielberger, C. D., Gorsuch, R. L., and Lushene, R. E., The State-Trait Anxiety Inventory. Preliminary Test Manual for Form X. Tallahassee, Florida: Florida State University, 1970.

**Security Classification**

10

DATE: 10/2/2012

Aviation office? confidential

● ● ● ● ●

٤٥٥

LINE 2

**200 & 201**

449

BSA-15

540

[illegible]

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Unclassified

Naval Air Station

DOCUMENT CONTROL DATA - R & D

Security classification of title, body of abstract and indexing information must be entered when the given report is classified

Naval Air Station  
Naval Aerospace Medicine  
Naval Aerospace Medicine  
Pensacola, Florida 32512

Research Laboratory  
Institute  
Center

REPORT SECURITY CLASSIFICATION

Unclassified

GROUP

N/A

REPORT TITLE

STATE AND TRAIT ANXIETY IN STUDENT NAVAL AVIATORS

4. DESCRIBING NOTES (Type of report and inclusive dates)

5. ADVISORY NOTES (Include related, related, test notes)

Steven F. Becky, LT MSC USNR, Professor Charles D. Spielberger, and Ronald M. Belo, LT MSC USNR

6. REPORT DATE

4 Dec 1970

10. TOTAL NO. OF PAGES

5

11. NO. OF PAGES

2

12. CONTINUITY OF SERIES NO.

13. ORIGINATOR'S REPORT NUMBER

NAMRL-1125

14. PROJECT NO.

MF12.524.002.5001D

15. OTHER REPORTS (List any other numbers that may be assigned this report)

62

16. DISTRIBUTION STATEMENT

This document has been approved for public release and sale; its distribution is unlimited.

17. UNCLASSIFIED NOTES

18. CLASSIFIED MILITARY ACTIVITY

19. SUMMARY

Measures of State and Trait Anxiety were given to Aviation Officer Candidates (AOC's) with the usual instructions as well as with instructions to answer as if you had just made your first landing on an aircraft carrier. Significant differences were observed when comparing the experimental group to college students. The AOC's obtained significantly lower anxiety scores when taking the test with the "carrier" test.

DD FORM 1473

(PAGE 1)

8/8 0101-607-6001

Unclassified

Security Classification